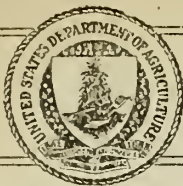


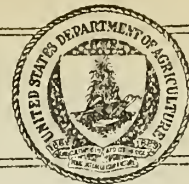
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U. S. DEPARTMENT OF AGRICULTURE
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WASHINGTON, D. C.

NOTE TO EDITORS:

Last week's issue of "The
Market Basket" was unavoidably delayed.
This is the first issue since the
release for January 22.

RELEASE FOR PUBLICATION
FEBRUARY 5, 1936 (WEDNESDAY)

THE MARKET BASKET

by

Bureau of Home Economics, U. S. Department of Agriculture

MINERALS IN THE DIET FOR TWO PURPOSES

Some of the foods that go into a well-planned diet are there to supply the body's need for minerals — calcium, phosphorus, iron, and various other minerals. Some of these are needed in our food as materials for good bones and blood, and many more of them serve to regulate the processes that go on in the human body to keep it alive. The ordinary individual gets these minerals in his food, just as he gets the other materials he needs — provided he chooses the right foods. That means, says the Bureau of Home Economics of the U. S. Department of Agriculture, a variety of foods sufficient to furnish the proteins, carbohydrates and fats needed as body-building materials and as fuel, and the necessary minerals and vitamins to keep the body in good running order.

All these necessary food substances are available in the common, everyday articles of food grown on the farm and sold in the market, the Bureau points out. But foods vary so much in their composition — they vary so much in their mineral

content as well as in other food values -- that here is one more reason why the meal-planner should make sure of providing a sufficient variety of foods in each day's menu. For minerals alone, it takes such a variety as milk, green vegetables, eggs, lean meats, and grains. To provide all the necessary food materials, it takes a greater variety than that.

In the ordinary sense of the word, the so-called "minerals" necessary in our food are not all mineral. Nutritionists use the word for convenience, however, to cover a group of such elements as sodium, potassium, calcium, magnesium, iron, copper, manganese, iodine, chlorine, phosphorus, and sulphur, all known to be indispensable to the human body. These elements occur in many of the plant and animal substances we use as food -- and that means nearly all our food. Thus, in any reasonably varied diet, we get enough of most of the minerals. To get enough calcium and iron, however, requires planning to include the foods that supply them. Milk and meat, for instance, differ in their mineral content so much that although we use them both for their phosphorus, we use milk for its calcium also, and meat for its iron -- each supplying something the other lacks. Pure fats and pure sugars are the only foods that contain no mineral substance at all.

Minerals are needed by the body for more than one purpose. Calcium and phosphorus are necessary as materials for good bones and teeth, iron is one of the necessary materials for good blood. But these and all the others act in various ways to regulate the life processes. They are absorbed from the digestive tract into the blood and carried throughout the body. Dissolved in the body fluids -- in the blood, the digestive juices, the thyroid and other secretions -- they give to those fluids their characteristic influence upon muscles, nerves and other tissues.

Some of these mineral compounds we can taste, or see, or recognize in some

other tangible way. Sodium chloride, or common salt, we recognize in tears. An iron compound gives the blood its color, and the clotting that stops the flow of blood from a cut finger is due, in part, to the calcium in the blood. Calcium, potassium, and sodium play an important part in keeping the rhythm of the heart beat. Hydrochloric acid, composed of hydrogen and chlorine, is essential in the gastric juice, which does its work in the stomach.

It is the mineral elements in our food that keep some fluids acid - as the gastric juice, again - and keep others alkaline, the blood for example. In general they help to maintain the "acid-base balance" in the body.

Certain minerals, then, are indispensable to the body, and therefore necessary in our food. And it is easy enough to get them if we have the right foods -- the right variety of foods.

As a matter of fact, all of the minerals we need are supplied in milk, vegetables, fruits, lean meats, and fish or eggs. The most important points for the meal-planner to remember are:

For calcium: The best sources are milk, cheese, leafy vegetables, and some sirups - molasses, sorghum and sugar-cane sirup.

For phosphorus: Lean meats, eggs, milk, whole grains, and beans or peas.

For iron: Egg yolks, lean meats (especially liver), oysters and shrimps, green leaves, beans or peas, dried fruits, molasses, sorghum and sugar-cane sirups, and whole grains.

Sea foods such as oysters, clams, lobsters, and shrimps, and the salt-water fish -- cod, mackerel, bluefish, halibut, flounder, tuna, salmon, and many other salt-water food fish, are rich sources of iodine.



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WASHINGTON, D. C.

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THE MARKET BASKET

by

Bureau of Home Economics, U. S. Department of Agriculture

VITAMINS - AND WHY

One of the kinds of food material needed for a good diet is that group of substances called vitamins. Yet some of the foods rich in vitamins, as it happens, are the items sometimes left out of the meal or skimmed, for one reason or another. Perhaps we think of those foods as too expensive, though they are not necessarily so. Perhaps these items are not so much a family habit as are some others. Vitamin-rich foods, however, should no more be neglected than protein-rich foods, or carbohydrate foods, or any other essential kinds of food.

But which are the vitamin-rich foods? Or for that matter, what are vitamins? Everybody knows that word, nowadays, and some people overwork it. Vitamins, however, are essential food materials, and should be understood as such, says the Bureau of Home Economics of the U. S. Department of Agriculture. Their discovery was one of the most important in the history of the science of foods and nutrition -- so important that two of the pioneers in that field of research, Dr. Christian Eijkman and Sir F. Gowland Hopkins, were awarded, in 1929, a Nobel prize.

The story dates back some 35 years, to the beginning of this century. Before then vitamins were unheard of, although some scientists had come to think that there was more to the chemical composition of food than had as yet been dreamed of. Then Dr. Eijkman, a young Dutch medical officer stationed in Java,

made a discovery. He saw many cases of a very old affliction, common among the peoples of the Eastern Hemisphere, called beriberi. He also saw chickens with the same affliction. So he experimented with the chickens and found that if they were fed on rice from the people's left-over meals the chickens also were afflicted, and at first he thought there was something wrong with the rice. Then he found that if he fed the chickens the rice polishings, containing the outer skin of the rice grain, they did not have beriberi, or they recovered if they had it. So he was convinced there was something in the outer coat of the rice which chemists had not yet discovered. About the same time the English scientist, F. Gowland Hopkins, found that his laboratory animals stopped growing when he fed them just the pure substances known to be contained in milk, but they started growing again as soon as he gave them a few drops of real milk. So here was evidence of something hitherto unrecognized in the composition of milk.

These discoveries started the search for the unknown food substance --- which has now turned out to be six, seven, and maybe more separate new substances. They appeared to be of one family, and Dr. Casimir Funk, a Polish scientist, called the first one a vitamine. The name is a coined word, from vita meaning life, and amines, the chemical name for a group of substances to which the first of the new discoveries was mistakenly supposed to belong. But the name vitamin was kept (without the e), then for convenience to chemists, the different vitamins were called by the letters of the alphabet. The first part of the name is appropriate, for vitamins are essential to life.

The vitamins were not discovered all at once, but singly, one after another. Their names do not indicate the order of their discovery, either -- first came vitamin B, then vitamin A, then vitamins C, D, E, and G. At least one more is known to exist, but there is no vitamin F, so far.

The vitamins are quite different in character. They are different from each other in behavior as well as in composition, they serve different parts or different processes in the body, and they are distributed unequally in the different foods.

Vitamin-rich foods, therefore, are not a class by themselves. There are some vitamins characteristic of certain fat or oily foods -- those particular vitamins (A, D, and E) are soluble in fat. Three other vitamins (B, C, and G) are soluble in water, and are found characteristically in the juicy, succulent or watery foods, such as vegetables and fruits. But the lines cross both ways, and there are at least two vitamins (A and E) that are found both in oily foods and in watery ones.

So the housekeeper should know her vitamins in order to choose a sufficient variety of foods to provide a good diet for her family. Nor is the choice of foods the only aspect of this problem. Some of these remarkable substances can be stored as a reserve in the body for use as needed, so if they are lacking in today's meals, this lack can be made up tomorrow. There are other vitamins, however, that either can not be stored in the body, or are stored to such a small extent that a fresh supply is needed daily. And these are the same vitamins that are more or less perishable because they may be destroyed by exposure to the air and to heat, or lost by dissolving in the cooking water. This means that the foods containing these vitamins require special handling when it comes to preparing, cooking or serving them. Some of the vitamins, then, are much easier to supply than others.

Vitamin E is easy to supply. It is found in so many of the common foods that we could hardly escape getting it if we tried.

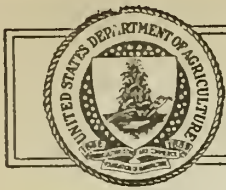
It is not easily destroyed in cooking, and this is one of the vitamins the body can store in its tissues. So vitamin E need give the housekeeper no special concern. Its importance, however, has been proved so far as certain experimental animals are concerned, especially its relation to reproduction. Its importance to human beings is still being studied.

Vitamin G is another that is still being studied to find out its true relationships. It was given its name after scientists discovered that in vitamin B they were dealing with not just one substance but at least two. The second they called vitamin G, and discovered that, like the rest, it is necessary to good nutrition. Apparently this vitamin, or rather the lack of it, is related to the deficiency disease called pellagra.

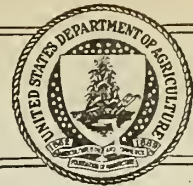
Vitamin G, however, is not difficult to supply. It is found in many different kinds of food, and it stands cooking. Good sources of this vitamin are milk in all its forms, lean meats, green vegetables, peanuts, soybeans, and whole wheat. Particularly rich in vitamin G are such meats as liver and kidneys, and such greens as turnip tops, kale, and mustard.

In short, a meal that includes milk, whole wheat bread, lean meat, potatoes and a green vegetable provides both vitamin E and vitamin G.

With the other four vitamins, as happens so often all through the story of food values and diet, the foods that are best sources of one may be poor sources of another. Vitamin A is found in certain foods from animal sources, also in the yellow and green parts of vegetables and fruits, and is not very sensitive to heat but it is never too plentiful for our normal requirements. Vitamin D is supplied in very few foods. Vitamins B and C, which are found in many foods, dissolve in water, and are also sensitive to heat, so the foods containing them require special treatment in cooking. These last four vitamins, then, for one reason or another, are not quite so easily provided in the ordinary routine of meal-planning as are vitamins E and G. Each, in fact, is another and separate story.



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WASHINGTON, D. C.,

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THE MARKET BASKET

by

Bureau of Home Economics, U. S. Department of Agriculture

FOODS THAT SUPPLY VITAMINS A AND D

Foods that are called rich in vitamins may contain them all, but few foods are really rich in more than two or three of the six or seven known vitamins. That puts it up to the housekeeper again, says the Bureau of Home Economics of the U. S. Department of Agriculture, for it is part of her job to provide the family with all the essentials of a good diet. In other words, she must provide vitamins, as well as carbohydrates, fats, proteins, and minerals in the meals she serves, and there is a "how" to this for each of the vitamins--even for vitamins A and D, although these two "fat-soluble" vitamins are found in some of the same foods.

Vitamin A is found in two classes of foods, however. The best sources of vitamin A are, on the one hand, yellow vegetables, yellow fruits, and green leafy vegetables; and on the other hand, certain foods from animal sources. This is due to the fact, nutritionists say, that the "mother substance" of vitamin A, or its "precursor", is carotene, a yellow coloring matter in carrots and in other yellow vegetables and fruits. Carotene is also present in the green leafy vegetables, although here it is masked by the green coloring, or chlorophyll. Carotene in these foods, when eaten by man or beast, becomes vitamin A in the body.

Each of the vitamins is important in its own way. Nutritionists have

found that vitamin A is necessary not only for growth and development of the body generally, but in particular to keep the linings in good condition--membranes of the nose, sinuses, throat, lungs, and the digestive tract. This is one of the vitamins the body can store up, but when foods providing vitamin A are lacking long enough for the body's store to be depleted, those linings lose resistance to infection, and trouble sets in.

There need be no lack of vitamin A, however, if the right foods are chosen, and used often enough. The variety of foods rich in vitamin A--that is, rich in carotene, or vitamin A, or both--is such that one or more such foods may easily appear on the table in the course of a day, or even at every meal. "Rich", however, is a comparative term. There is actually not very much vitamin A in any food, so there is little chance of getting too much in our meals. The best sources of vitamin A are:

Animal foods: Liver, egg yolks, butter, cream cheese, cheddar cheese, cream, salmon (fresh or canned), cod liver oil and other fish liver oils.

Vegetables: Greens of all kinds, and the green parts (but not the white parts) of lettuce, cabbage, and other leafy salad vegetables, green peppers, green peas, green beans; carrots, sweetpotatoes, yellow squash, tomatoes.

Fruits: Apricots, prunes, yellow peaches.

Vitamin D presents a very different problem to the housekeeper. This vitamin, like vitamin A, occurs in certain animal fats and oils--but there are not very many foods rich in vitamin D. Richest of all are such oily fish as salmon and butter and sardines. Eggs/are comparatively good sources, though variable. Liver, cream, milk and oysters contain a little. But at best, the quantity of this vitamin that can be had in the common foods under ordinary conditions is not very great.

There is another source of vitamin D, however, and that is sunlight--or rather, the ultra-violet rays in the sunlight acting upon the skin either of

... ..

• *Staphylococcus aureus* (Staph aureus)

animals or human beings. The skin contains a substance which is changed by the sun's ultra-violet rays into vitamin D, so human beings and animals that spend a great deal of their time in the sun get much of their vitamin D that way.

The discovery of these facts had important results for children. It was known that undernourished babies, and little children shut off from the sunshine in city tenement districts commonly had rickets--a disease of the bones, which left such children bow-legged, "chicken-breasted", or otherwise deformed for life. Milk helps to prevent this condition, because of the bone-making materials (calcium and phosphorus) milk contains. But milk alone will not do it. Something else is needed, something to help the child's body use the bone-making materials milk supplies--in other words, vitamin D, which must be supplied in the children's foods if they do not get enough sunshine. Nowadays, therefore, to prevent rickets, nutritionists say: Feed the child plenty of milk, plus some good vitamin D-rich food--for milk ordinarily contains only a little of this vitamin. Give the child plenty of outdoor sunshine, too, of course.

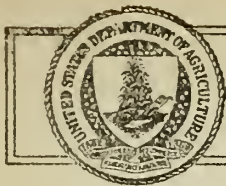
But what shall be used as a food rich in vitamin D? Doctors and nutritionists alike have said cod-liver oil which furnishes the important vitamin A also--and cod liver oil has become a more or less regular part of the child's diet nowadays, especially in winter when there is less sunshine, and less of the useful rays in what sunshine there is.

Other ways of providing vitamin D in foods have since been discovered. Cow's milk can be enriched with this vitamin by feeding the cow "irradiated" yeast--i.e., yeast exposed to ultra-violet light to provide it with vitamin D. Or vitamin D can be added to the milk in two other ways. One way is to add cod-liver oil extract to the milk (you don't get the cod-liver taste at all), and the other way is to "irradiate" the milk itself. All three methods are used commercially, and "vitamin D milk" is on the market like other milk, though it costs a little more. Each product of this kind is of course subject to inspection,

not only for ordinary wholesomeness but to prevent deception by false labeling.

Vitamin D for adults is not much of a question. Their bones are built, and if they get plenty of outdoor sunshine, the small amounts of vitamin D they get in the milk, butter, eggs, salmon, sardines, and liver they eat are probably all they need, nutritionists say. Not sunshine through window panes, however, or through any other glass, unless it is the kind of glass specially manufactured to let the ultra-violet rays come through. Outdoor sunshine, however, can not be improved upon.

For both these vitamins, then-- vitamins A and D--we look to certain foods of animal origin: Eggs, butter, cream, cheese, milk, liver, kidney, salmon and some other fish, also cod liver oil. For vitamin A we look also to green and yellow vegetables and yellow fruits. For vitamin D, we look to direct sunshine, as well as to the foods already mentioned, to cod-liver oil, and to milk enriched with vitamin D.



U. S. DEPARTMENT OF AGRICULTURE
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Press Service



WASHINGTON, D. C.

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FEBRUARY 26, 1936 (WEDNESDAY)

THE MARKET BASKET

by
Bureau of Home Economics, U. S. Department of Agriculture

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THE PERISHABLE VITAMINS -- B and C

One reason why the housekeeper should know her vitamins is that, without special care, two of them may be lost in preparing or cooking the foods that contain them. These perishable vitamins are the highly essential two called B and C. And not only may they be lost, but the human body is unable to store up much, if any, reserve of these two vitamins. This makes it important to replenish our supply every day.

To do this, says the Bureau of Home Economics of the U. S. Department of Agriculture, is a matter of knowing two things: First, which foods to choose for their content of vitamins B and C; and second, how to prepare those foods for the table with the least possible loss of their vitamin values. Many of the foods we usually cook contain both these vitamins.

Vitamin B

Vitamin B, although it comes second in the alphabet, was the first vitamin discovered. It is now known to play an important part in maintaining good appetite and good muscle "tone" in the intestinal tract. Lack of vitamin B, in extreme cases, is the cause of a kind of paralysis long known, especially in the Orient, as beriberi. In fact, it was a scientist's observation of this disease,

and the diet of the people who had it, that led to discovery of this vitamin.

Many foods contain vitamin B, but most of them do not contain very much. Some of the best sources are the common vegetables -- potatoes, sweetpotatoes, carrots, parsnips, cabbage, greens of various kinds -- practically all the vegetables contain it. Beans and peas are good sources because we eat the whole seed, including the germ portion. Whole-grain cereals also are good sources. Lean meat, liver and other edible organs furnish vitamin B; fruits furnish a little; and so does milk.

Vitamin C

Vitamin C, when it was discovered, provided the answer to an age-old problem. From ancient times on down, the world knew a plague which had finally come to be understood as due to poor diet. This plague was scurvy. It afflicted armies, the crews of sailing ships, explorers -- any people who for whatever reason had to do without fresh fruits and vegetables for a considerable time. Lemon juice was found to prevent scurvy -- and the British navy provided lemons as a compulsory part of the sailors' rations. But nobody knew why the lemons were effective.

Now we know that scurvy is the acute form of that kind of malnutrition which comes from lack of vitamin C. All the citrus fruits -- oranges, grapefruit, tangerines, limes, as well as lemons, are rich sources of vitamin C, and it was this vitamin in the lemons that protected the British sailors from scurvy. Mild forms of scurvy are not uncommon now -- bringing sore gums, loose teeth and sore joints, the degree of trouble depending on the degree of the shortage of vitamin C in the diet of the people affected.

In this country and in our times, however, adults can easily get foods that furnish the vitamin C they need if they know which foods those are. Most fruits and vegetables furnish more or less of this vitamin, and some are very rich sources, if used fresh and without cooking.

The citrus fruits are at the top of the list, and with them come tomatoes, which are good sources of vitamin C even after they are cooked or canned. Other fruits and vegetables, however, lose so much of this vitamin if cooked that nutritionists advise us to depend chiefly on those we use without cooking -- fresh fruit or fruit juices, fruit or raw vegetable salads, including, for example, such vegetables as cabbage, carrots, turnips, radishes, etc., along with the salad greens.

Babies, since they live so largely on milk, are at once affected if their food does not provide enough vitamin C. Pasteurized milk does not provide it, because the little of this vitamin that raw milk contains is destroyed by heat in the pasteurizing process. Breast-fed babies get all the vitamin C their mothers' milk contains, but nutritionists say all babies nowadays should also have orange juice or tomato juice every day, as a precaution against the sore gums that are the first sign of scurvy.

Saving vitamin values

Most of the foods that furnish vitamin B or vitamin C or both are the very ones we usually cook. In meats, whole-grain cereals, dried beans and peas, it is vitamin B we have to reckon with in cooking. This vitamin dissolves in water, and is also sensitive to heat, although less easily destroyed than vitamin C. The chief precaution where vitamin B is concerned, according to the Bureau of Home Economics, is to save and use the juices or cooking liquid. With meats this is easy, because everybody enjoys the meat juices, either "as is" or in gravy or soup. With cereals it is easy because the cooking water is all absorbed. With dried beans and peas, also, the cooking water is absorbed, or is used in soup.

With fresh vegetables, and with fruits, as a rule both vitamins B and C are involved, and there is a precaution to be taken in preparing these foods for use either cooked or uncooked.

Exposure to the air, especially the cut surface of a fruit or vegetable, or its juice, causes loss of the very perishable vitamin C. Therefore, says the Bureau, don't squeeze out fruit juices ahead of serving time. They lose vitamin value, and flavor too, on standing.

As to cooking the fresh fruits and vegetables to avoid undue losses of vitamins B and C, the first rule is the same as for vitamin B alone: Save the juice or the cooking liquid to get the vitamins and also some minerals that are dissolved in it. In fact, use just as little water as possible to begin with, so there may be no more liquid left than may easily be served with the vegetable or the fruit, as the case may be.

The second rule is to cook quickly. Not only does water dissolve both these vitamins, but heat destroys C very rapidly, and increases the loss of B. So the Bureau says: Cook in as little water as possible, for as short a time as possible -- i. e., no longer than necessary to make the vegetable tender and palatable.

The third rule is: Do not cook vegetables with soda if you want to keep the vitamin values. Soda, which is an alkali, destroys both vitamins B and C.

Some of the vegetables and fruits, when cooked, retain their vitamin values better than others, tomatoes probably best of all. The acid in the tomato lessens the loss of vitamin C, so that cooked or canned tomatoes furnish much of their original vitamin content. In some degree this is true, also, of canned grapefruit, canned pineapple, and canned peaches.

